Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

1-22. (Canceled)

23. (Currently amended) A single chain protein, comprising:

(a) a binding domain polypeptide capable of binding to a target biological molecule, said binding domain polypeptide being joined to

(b) a hinge peptide, said hinge peptide being joined to

(c) an immunoglobulin IgG heavy chain CH2 constant region polypeptide, said CH2 constant region polypeptide being joined to

(d) an immunoglobulin IgG heavy chain CH3 constant region polypeptide,

wherein said hinge peptide is an IgG1 ~~IgG~~ hinge peptide in which the number of cysteine residues is two and the first cysteine of the hinge that is responsible for forming a disulfide bond with a light chain constant region in a naturally occurring IgG antibody is not deleted or substituted, and

wherein said single chain protein (1) binds to said target biological molecule, and (2) promotes antibody dependent cell-mediated cytotoxicity or complement fixation or both.

24. (Currently amended) A single chain protein, comprising:

(a) a binding domain polypeptide capable of binding to a target biological molecule, said binding domain polypeptide being joined to

(b) a hinge peptide, said hinge peptide being joined to

(c) an immunoglobulin IgG heavy chain CH2 constant region polypeptide, said CH2 constant region polypeptide being joined to

(d) an immunoglobulin IgG heavy chain CH3 constant region polypeptide,

wherein said hinge peptide is an IgG1 ~~IgG~~ hinge peptide in which the number of cysteine residues is one and the one cysteine is the first cysteine of the hinge that is responsible for forming a disulfide bond with a light chain constant region in a naturally occurring IgG antibody is not deleted or substituted, and

wherein said single chain protein (1) binds to said target biological molecule and (2) promotes antibody dependent cell-mediated cytotoxicity or complement fixation or both.

25. (Previously presented) The single chain protein of claim 23 or 24 wherein the target biological molecule is on the surface of a target cell,

wherein said single chain protein binds to said target cell and decreases the number of target cells.

26. (Previously presented) The single chain protein of any one of claims 23, 24, or 25 wherein said binding domain polypeptide is a single chain Fv polypeptide.

27. (Previously presented) The single chain protein of claim 26 wherein said single chain protein is capable of binding to a B cell target biological molecule.

28. (Previously presented) The single chain protein of claim 27 wherein said B cell target biological molecule is CD20.

29. (Previously presented) The single chain protein of claim 27 wherein said B cell target biological molecule is CD37.

30. (Previously presented) The single chain protein of claim 27 wherein said B cell target biological molecule is selected from the group consisting of CD19, CD22, CD30 ligand, CD54, CD106, and interleukin-12.

31. (Previously presented) The single chain protein of claim 27 wherein said single chain protein is capable of depleting a population of B cells.

32. (Previously presented) The single chain protein of claim 25 wherein said single chain protein is capable of decreasing the number of target cells in vivo.

33. (Previously presented) The single chain protein of claim 25 wherein said single chain protein is capable of decreasing the number of target cells in vitro.

34. (Previously presented) The single chain protein of claim 26 wherein the heavy and light chain variable regions of the single chain Fv are joined by a polypeptide linker of at least about 6 amino acids.

35. (Previously presented) The single chain protein of claim 25 wherein said binding domain is a single chain Fv polypeptide capable of binding to a target biological molecule selected from the group consisting of CD2, CD5, CD10, CD27, CD28, CD40, CTLA-4, 4-1BB, and interleukin-17 receptor.

36. (Previously presented) The single chain protein of claim 25 wherein said binding domain is a single chain Fv polypeptide capable of binding to a target biological molecule selected from the group consisting of CD59, CD48, CD72, CD70, CD86/B7.2, CD40 ligand, CD43 and VLA-4 ($\alpha_4\beta_7$).

37. (Previously presented) The single chain protein of claim 25 wherein said binding domain is a single chain Fv polypeptide capable of binding to a target biological molecule selected from the group consisting of CD83 and DEC-205.

38. (Previously presented) The single chain protein of claim 25 wherein said binding domain is a single chain Fv polypeptide capable of binding to a target biological molecule selected from the group consisting of HER1, HER2, HER3, HER4, epidermal growth factor receptor, vascular endothelial cell growth factor receptor, transferrin receptor, estrogen receptor, progesterone receptor, follicle stimulating hormone receptor, retinoic acid receptor, MUC-1, NY-ESO-1, NA 17-A, Melan-A/MART-1, tyrosinase, Gp-100, MAGE, BAGE, GAGE, CTA class receptors, the HOM-MEL-40 antigen encoded by the SSX2 gene, carcinoembyonic antigen, and PyLT.

39. (Previously presented) The single chain protein of any one of claims 23, 24 or 25 wherein said binding domain polypeptide is a single chain Fv capable of binding CD20, and wherein said immunoglobulin heavy chain CH2 and CH3 constant region polypeptides are IgG1 CH2 and CH3 constant region polypeptides.

40. (Previously presented) The single chain protein of claim 39, wherein said single chain protein includes a 2H7 single chain Fv binding domain polypeptide.

41. (Previously presented) The single chain protein of claim 39, wherein said single chain protein includes a 2H7 single chain Fv binding domain polypeptide, and wherein

the number of cysteine residues in the hinge peptide is reduced by amino acid substitution of serine in place of cysteine.

42. (Previously presented) The single chain protein of claim 39, wherein said heavy chain constant region comprises a CH2 domain in which a leucine has been replaced with serine at position 234.

43. (Previously presented) The single chain protein of claim 42, wherein the binding domain polypeptide is a 2H7 single chain Fv.

44. (Previously presented) The single chain protein of claim 39 wherein said binding domain polypeptide is a 2H7 single chain Fv, and wherein said hinge peptide comprises at least a portion of an IgA hinge.

45-47. (Canceled)

48. (Previously presented) The single chain protein of claim 26 wherein said binding domain is a single chain Fv capable of binding a L6 carcinoma antigen, and said immunoglobulin heavy chain CH2 and CH3 constant region polypeptides are IgG1 CH2 and CH3 constant region polypeptides.

49-101. (Canceled)

102. (Previously presented) The single chain protein of claim 26 wherein said single chain Fv polypeptide is a 2H7 scFv, and wherein said hinge peptide comprises at least a portion of an IgA hinge.

103. (Canceled)

104. (Previously presented) The single chain protein of claim 26 wherein said target is an L6 carcinoma antigen, said binding domain is capable of binding L6, said hinge peptide comprises at least a portion of an IgA hinge, and said immunoglobulin heavy chain CH2 and CH3 constant region polypeptides are IgG1 constant region polypeptides.

105. (Canceled)

106. (Previously presented) The single chain protein of claim 26 wherein said target is an L6 carcinoma antigen, said binding domain is capable of binding L6, one or more cysteine residues in said hinge peptide have been replaced with one or more serine residues, and said immunoglobulin heavy chain CH2 and CH3 constant region polypeptides are IgG1 constant region polypeptides.

107-141. (Canceled)

142. (Previously presented) The single chain protein of claim 39 wherein one or both of said IgG1 CH2 and CH3 constant region polypeptides are human IgG1 CH2 and CH3 constant region polypeptides-able to mediate ADCC.

143. (Previously presented) The single chain protein of claim 23 or 24 wherein the number of cysteine residues is reduced by amino acid substitution.

144. (Previously presented) The single chain protein of claim 143 wherein the amino acid substitution is a conservative amino acid substitution.

145. (Previously presented) The single chain protein of claim 144 wherein a cysteine residue is substituted with a serine residue.

146. (Previously presented) The single chain protein of claim 23 or 24 wherein said binding domain is a single chain Fv polypeptide capable of binding to a target biological molecule selected from the group consisting of 4-IBB ligand, interferon-γ, interleukin-4 and interleukin-17.

147. (Previously presented) The single chain protein of claim 23 or 24 wherein said binding domain is a single chain Fv polypeptide capable of binding to IL-17.

148. (Previously presented) The single chain protein of claim 23 or 24 wherein said binding domain is a single chain Fv polypeptide capable of binding to a target biological molecule selected from the group consisting of vascular endothelial cell growth factor, insulin-like growth factor-I and insulin-like growth factor-II.